

The Characteristics of Hurricanes From TOPEX/POSEIDON Altimetry

C S Morris, W H Daffer, and P S Callahan (Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109; 818-354-8074; csm@encke.jpl.nasa.gov)

Although TOPEX/POSEIDON is designed for measuring the large-scale dynamics of the ocean, this altimetry system also provides unique information for the investigation of intense storms. Specifically, significant wave height, wind speed (as represented by σ_0), and sea surface displacement can be estimated. Of course, the disadvantage of a nadir-looking altimeter is that data collection over a specific storm is by chance.

In this paper, we look at the characteristics of tropical storms and hurricanes, as observed by TOPEX/POSEIDON, during the 1993 and 1994 hurricane seasons in both Atlantic and Pacific. The hurricane season in the Pacific in 1994 was particularly active with several powerful storms (Emilia, Gilma, and John). For comparison, we also looked at several tropical storms, including Fabio in 1994. In general, there are two or three satellite passes near these storms during their life cycle. In the case of Hurricane John, there is a nearly-direct pass over the center of the storm.

We will present both case studies and statistics (as a function of central pressure and distance from the center of the storm) of the altimeter-derived parameters. For instance, significant wave heights in excess of ten meters are observed near the center of powerful hurricanes, while at moderate distances or for weaker storms, waves of only four meters are found. We typically find both wind and wave distributions skewed relative to the center of the storm.

1. 1994 Fall Meeting

2. 007166908
(C. S. Morris - AGU Member)

3. Charles S. Morris
JPL, M/S 300-319
4800 Oak Grove Drive
Pasadena, CA 91109

(b) 818-354-8074

(c) 818-393-5184

4. U

5.(a) U05 Oceanographic and Geophysical Applications of Precise Sea Level Measurement from TOPEX/POSEIDON

(b) 4560 Surface waves and tides
3374 Tropical meteorology
4556 Sea level variations

6.

7. 0%

8. \$50

9. C

10.

11. No